

Claims

1. Method for producing pure melamine, characterized in that the melamine melt prepared from urea in a high-pressure process, optionally after stripping of the off-gases and optionally after dwelling in an ageing container, is cooled to a temperature which is about 1 to 50°C above the melting point of melamine dependent on the respective ammonia pressure, with the addition of ammonia, after which either

- a) quenching is effected with water or an aqueous ammonia- and/or melamine-containing solution or suspension and the melamine is solidified - or
- b) quenching is effected with cold liquid or gaseous ammonia, the melamine solidifying and then being further cooled in a second step with water or an aqueous ammonia- and/or melamine-containing solution or suspension and
- c) the melamine is then isolated.

2. Method according to Claim 1, characterized in that the cooling of the melamine melt to the temperature which is from about 1 to 50°C above the melting point of the melamine is effected by passing in cold liquid or gaseous ammonia.

3. Method according to either of Claims 1 and 2, characterized in that the melamine obtained according to a) or b) and present as a suspension is dissolved by feeding in an aqueous ammoniacal solution, preferably a recycled mother liquor obtained in the crystallization, the solution is optionally mixed with NaOH and, if required, allowed to dwell, the dissolved ammonia is, if required, stripped, filtration is then effected and

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the melamine is crystallized and isolated.

4. Method according to any of Claims 1 to 3, characterized in that the melamine melt is quenched in stage a) by means of recycled mother liquor obtained in the crystallization.

5. Method according to any of Claims 1 to 4, characterized in that the melamine melt is cooled to a temperature which is from about 1 to 50°C above the melting point of the melamine, at an ammonia pressure of from about 50 to 1000 bar while feeding in ammonia.

6. Method according to any of Claims 1 to 5, characterized in that the melamine melt is cooled to a temperature which is from about 1 to 30°C above the melting point of the melamine.

7. Method according to any of Claims 1 to 6, characterized in that the melamine melt is cooled to a temperature which is from about 1 to 50°C above the melting point of the melamine, by passing in ammonia for from about 1 min to 10 h.

8. Method according to any of Claims 1 to 7, characterized in that quenching is effected in stage a) at a temperature of from about 25°C to 300°C, preferably from about 50°C to 200°C and a pressure of from about 1 to 100 bar, preferably from about 1 to 50 bar.

9. Method according to any of Claims 1 to 8, characterized in that quenching is effected in stage b) at a temperature of from about 200°C to 270°C and a pressure of from about 1 to 100 bar, preferably from about 1 to 50 bar and further cooling is then effected in the second step to about 50°C to 200°C.

10. Method according to any of Claims 1 to 9, characterized in that melamine and urea are washed out

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of the off-gases of the melamine reactor by means of a urea melt which simultaneously heats up, and the urea melt is then fed to the melamine synthesis in a melamine reactor and the off-gases are fed to a urea reactor.

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11. Method according to Claim 10, characterized in that the off-gases freed from melamine and urea are condensed, optionally with the aid of ammonium carbonate solution and/or ammonium carbamate solution which are taken off from a urea plant or the melamine plant, and the resulting heat is used for preheating the liquid ammonia used in the urea plant or for the production of steam.

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